Doklady Physics 2011 vol.56 N11, pages 573-576

Analog of the Kutta-Joukowskii theorem for the Helmholtz-Kirchhoff flow past a profile

Maklakov D.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

A study was conducted to demonstrate analog of the Kutta-Joukowskii theorem for the Helmholtz-Kirchhoff flow past a profile. The theorem stated that the flow domain was two-sheeted when a curve AB was convex or concave everywhere, which did not vanish identically and the curve was located in the flow at such an angle of attack that the points O and A coincided. The theorem demonstrated that this useless segment OA was of great importance for obtaining a realistic one-sheeted flow. It was possible to design the profiles which had the lift almost equal to maximum and the flow domain over them was one-sheeted.

http://dx.doi.org/10.1134/S1028335811090096